Metacognitive strategies in teaching and learning computer programming

ABSTRACT

It has been noted that teaching and learning programming is challenging in computer science education and that this is a universal problem. To understand and to code programs are perceived as being very challenging in computer science education. This is due to the demand for practical ability rather than theory alone. Studies have revealed that students with metacognitive management skills perform well in programming compared to lower-performing students. The more difficult the programming activity, the greater the need for the programmer to own metacognitive control skills. The cognitive processes in learning computer programming require a novice programmer to develop metacognitive skills. The main objective of this research work is to identify the metacognitive strategies in teaching and learning programming. An exploratory study was setup to identify the level of metacognition awareness of novice programmers using the MAI instrument. Interview sessions with expert lecturers were also conducted to identify the metacognitive approaches and the pedagogical method applied in the teaching and learning activities. The learning behaviours of novices were also identified through the interviewing sessions. It can be concluded that there is a correlation between the metacognitive awareness level of an individual and their academic achievement.

Keyword: Computer programming; Metacognitive strategies; Novice programmer; Computer science education